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PREDICTING SALESPERSON PERFORMANCE:
A REVIEW OF THE LITERATURE

Ruth Kanfer and Walter C. Borman
Personnel Decisions Research Institute

for

Contracting Officer's Representative
Deirdre Knapp

Personnel Utilization Training Area
Paul A. Gade, Chief

MANPOWER AND PERSONNEL RESEARCH LABORATORY
Newell K. Eaton, Director

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Technical review by

Deirdre J. Knapp
Michael E. Benedict



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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This research note reviews the research, conceptual and empirical, done on the prediction of sales performance, which appeared in the literature between 1951 and 1985. Methodological problems, including restriction in range, lack of information on predictor and criterion reliabilities, lack of cross-validation studies, and questionable generalizability of results to minority populations, all preclude conclusive evidence for determining whether any of the many variables investigated successfully predict sales performance, and if so, which		

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20. ABSTRACT (continued)

ones. A systematic effort to identify and map multidimensional behavior performance relations is suggested. This could serve as a critical next step in enhancing prediction of sales performance.

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PREDICTING SALESPERSON PERFORMANCE: A REVIEW OF THE LITERATURE

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PREDICTING SALESPERSON PERFORMANCE: A REVIEW OF THE LITERATURE

EXECUTIVE SUMMARY

Requirement:

To increase the sales effectiveness of the Army's recruiting force.

Procedure:

A two-stage procedure was used to obtain a complete list of studies appearing in the literature from 1951-1985. First, a comprehensive list of studies related to prediction and measurement of sales effectiveness was compiled by Churchill, Hartley, and Walker (1985) as part of a meta-analysis examining research on this topic from 1918-1982. The complete list of studies identified in this search was obtained from the authors and used as a primary source for locating studies during the period 1951-1982. Empirical studies and conceptual articles published from 1982-1985 were located by reviewing the major personnel, psychological, and marketing periodicals, including the Business Periodicals Index, Administrative Science Quarterly, Academy of Management Journal, Academy of Management Review, Journal of Marketing Research, Industrial Marketing Management, Personnel Psychology, Journal of Vocational Behavior, Journal of Applied Psychology, Organizational Behavior and Human Decision Processes, and the International Review of Applied Psychology. Empirical studies were included in the review if they addressed either predictor or criterion-related issues pertaining specifically to sales activities. Conceptual papers related to sales effectiveness were included if they were relevant to the discussion and interpretation of empirical findings. These broad guidelines led to inclusion of both predictive and descriptive studies of sales performance.

The review is divided into four sections. The first section describes and evaluates two recent conceptual models for predicting sales success. The second section reviews the empirical research pertaining to the validity of various criterion measures of sales performance. The third section evaluates empirical findings related to the validity of diverse predictors of sales effectiveness, including biographical/personal history variables, personality/vocational interest measures, aptitude measures, and behavioral/skill-related variables. The final section summarizes the findings and draws conclusions about enhancing the prediction of sales effectiveness.

Findings:

Two recent conceptual models were identified. Both models emphasize the multidimensional nature of behavioral and performance criteria. However, neither model has been conclusively tested and both models may require substantial modification as a result of theory testing.

Review of criterion-related empirical research revealed little consensus regarding the appropriate criterion measures for sales performance and effectiveness. Many studies used quantitative, objective measures of sales effectiveness. Although these measures often provide a global indicator of sales performance, they are not likely to assist in identifying specific sales behaviors related to performance. In contrast, subjective ratings of performance allow for more direct evaluations of behavior and performance on multiple dimensions. Although ratings are not without their problems (e.g., halo, leniency), they are likely to pick up important variance in performance not tapped by objective measures.

Review of the empirical research on the predictive validity of biographical, personality, aptitude, and behavioral variables provides mixed evidence for the usefulness of these variables. In most instances, such measures were of limited effectiveness when used alone as predictors of sales success. An exception is personality, where certain variables are reasonably consistent predictors of sales performance. The inability to draw definitive conclusions from previous findings is due to wide differences in methodology and operationalizations of the latent constructs across studies. As a consequence, it may be premature to conclude that these variables do not predict sales performance.

Meta-analytic results obtained by Churchill, Hartley, and Walker (1985) provide a concise, summary picture of the relationships between the predictor variables reviewed and sales criteria. However, definitive conclusions about predictor-performance relationships based on this meta-analysis cannot be drawn for a number of reasons, including the lack of clarification of the construct space underlying diverse predictor and criterion categories, and potential difficulties in analyses of nonindependent correlations.

Overall, results of the review explicate the need for systematic empirical work to clarify links between criterion performance and aptitude, motivational, personality, and personal history predictors. Also required is an examination of links between skill-related sales behaviors and sales performance. To date, relatively little attention has been paid to these critical links or toward the identification of categories of sales jobs to which predictor validities can be generalized.

Utilization of Findings:

Findings from the evaluative review may be used to begin a theoretically-driven investigation of the predictive validity and generalizability of non-cognitive, aptitude, and other predictors of sales performance in military recruiting.

PREDICTING SALESPERSON PERFORMANCE: A REVIEW OF THE LITERATURE

Introduction

A large proportion of the total civilian labor force is engaged in work involving sales activities. As reported in the 1984 U.S. census, (U.S. Dept. of Commerce, 1984), over 14.5 million persons, or approximately 18 percent of the total labor force, held sales-related jobs. Despite the large proportion of workers engaged in sales jobs, there has been little systematic research directed toward clarification of the determinants of effective sales performance.

One plausible explanation of this state of affairs stems from the relatively diverse groups that have been interested in understanding sales performance and effectiveness. Empirical research on the determinants of performance and effectiveness of different variables in predicting salesperson success has been fragmented and driven by specific interests of researchers in the psychological, personnel, and marketing domains. Unfortunately, only a small portion of the predictor-related studies available have examined predictor-criterion relationships specific to sales activities.

On the performance criterion side, there has been wide diversity in conceptualizing what underlies sales success or sales effectiveness. Although researchers in the psychological, personnel and marketing domain appear to agree on the multidimensional nature of criterion space, there has been considerable disagreement over the meaning of sales effectiveness and little empirical evidence to guide the development and choice of measures to index the construct. Thus, for a number of reasons on both the predictor and criterion sides, the state of research regarding sales effectiveness is less clear and complete than desirable.

The present paper examines both the conceptual statements and empirical research related to the prediction of sales performance appearing in the published literature from 1951-1985. Comprehensive and selective reviews of earlier literature can be found in Cleveland (1946), Cunningham (1935) and Guion and Gottier (1965). In addition, Churchill, Hartley, and Walker (1985) conducted a comprehensive search for studies related to sales effectiveness appearing during the period 1918 through 1982. A complete list of studies identified in this search was obtained from the authors and used as the primary source for locating studies during this period. Empirical studies published from 1982-1985 were located by reviewing the major personnel, psychological, and marketing periodicals, including the Business Periodicals Index, Administrative Science Quarterly, Academy of Management Journal, Academy of Management Review, Journal of Marketing, Journal of Marketing Research, Industrial Marketing Management, Personnel Psychology, Journal of Vocational Behavior, Journal of Applied Psychology, Organizational Behavior and Human Decisions Processes, and the International Review of Applied Psychology. Empirical studies were included in the present review if they addressed either predictor or criterion-related issues pertaining specifically to sales activities. Conceptual papers related to sales effectiveness were included if they were relevant to the discussion

and interpretation of empirical findings. This broad criterion led to inclusion of studies with diverse aims, including both predictive and descriptive studies of sales performance.

This review is organized into four substantive sections that follow the introduction. Recent conceptual models of the determinants of sales behavior, performance, and effectiveness are discussed in the next section. The third section reviews empirical research related to the development and validity of criterion measures used in predictive studies of sales success. The fourth section examines the research pertaining directly to the validity of personal history/experience, personality/vocational interest, aptitude, and skill-related variables in predicting sales success. The final section summarizes the findings of this review and suggests future directions for research on the development of valid predictors of sales success.

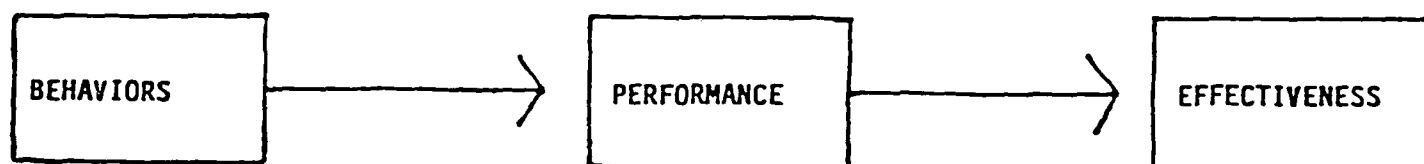
Models of Sales Performance

A central problem in evaluating the effectiveness of different variables as predictors of sales success has been the lack of theory about specific determinants of sales performance. Recently, Churchill, Walker, Ford and their colleagues (Churchill, Ford, Hartley, & Walker, 1985; Churchill, Ford, & Walker, 1981; Walker, Churchill, & Ford, 1979; Walker, Churchill, & Rod, 1977) have developed a theoretical framework and outlined a research strategy to identify performance determinants and to clarify their relative influence on sales effectiveness. Likewise, Weitz (1979) proposed a contingency model of sales performance determinants emphasizing salesperson characteristics and behaviors along with situational factors influencing sales performance. Finally, the present authors offer a modification of the Churchill et al. model, following closely the recommendations made by Campbell, Dunnette, Lawler, & Weick (1970) on distinctions between behavior, performance, and effectiveness.

The Churchill, Walker et al. Formulations. Similar to the point made by Campbell et al. (1970) concerning the distinction between behaviors and outcomes, Walker et al. (1979) suggest that sales criterion measures may be conceptually distinguished in terms of whether the measures used refer to sales behavior, sales performance or sales effectiveness. Walker et al. (1979) note that the distinction between behavioral, performance, and effectiveness criterion measures is most important for considering the influence of factors outside the individual salesperson's control on these criteria. Figure 1 summarizes the relations among behavior, performance, and effectiveness as suggested by Walker et al. (1979).

According to Walker et al. (1979) behaviors function as the building blocks upon which performance is based. Behaviors refer to the sales-related activities which persons perform. These behaviors are presumed to be primarily under the individual's control and include, for example, number of calls made and percent of time devoted to specific activities (e.g., writing orders, making sales presentations). Performance, in turn, refers to the evaluation of sales-related behaviors in terms of the contribution of these activities to organizational goals. Thus, performance reflects how well a behavior is performed rather than how frequently it is

Figure 1. Hypothesized behavior-performance-effectiveness relations
(from Walker et al., 1979)



Examples:

number of calls made
percent time writing orders
percent time making presentations
number of peer consultations

Examples:

Selling skills
Communication skills
Ability to maintain
satisfactory customer relations
Overall performance

Examples:

Sales volume
Total earnings

done. Because performance measures represent judgments about behaviors, variance in criterion performance measures across organizational settings may be due to the individual's behaviors, the method of measurement, and/or the organization's goals. As Churchill et al. (1979) point out, different sales jobs may entail different sales-related activities. Comparisons of sales performance across organizations comprised of different sales jobs may thus reflect differences in behavioral constellations as well as evaluations of how adequately the behaviors are executed. In addition, measures of performance may be either subjective, such as managerial ratings of sales effectiveness on a number of behavioral dimensions, or objective, such as percentage of quota sales obtained each quarter. Finally, the organizations' goals, in terms of desired outcomes of sales activities may influence performance evaluations in organizations that emphasize sales volume goals may weight certain selling skills more heavily than do organizations that emphasize customer service.

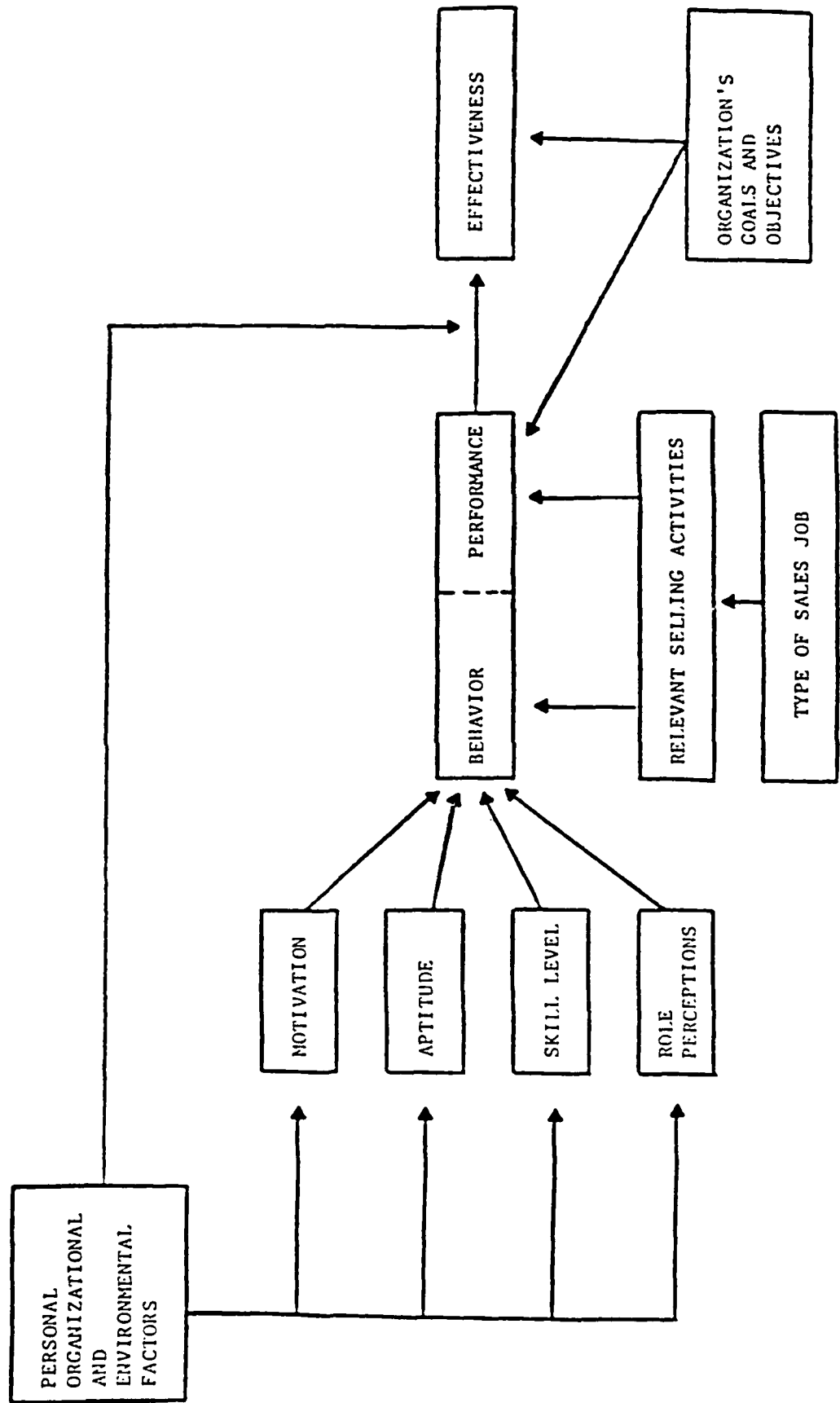
Determinants of Sales Performance and Effectiveness. Walker et al. (1979) and Churchill et al. (1981) propose a six-component model of sales performance and effectiveness that delineates the major determinants of sales success. In this framework, sales effectiveness is viewed as a function of personal factors, motivation, skill levels, aptitude, role perceptions, and organizational/environmental factors. Figure 2 summarizes this model. Motivation, skill levels, aptitude, and role perceptions appear most logically related to sales performance criteria -- the evaluated products of one's behavior or actions. In the Walker et al. (1979) model, these four variables thus exert their influence directly on behavior, and have a direct impact on the resulting performance.

Walker et al. (1979) also distinguish between aptitude and skill-related variables. Aptitude measures, designed to assess the individual's capability for performance, typically involve use of standardized instruments that tap intelligence, psychomotor abilities, and the like. In contrast, skill measures are designed to assess the individual's current level of functioning with respect to specific sales-related activities. Skill measures are often developed specifically for the sample under investigation. Walker et al. (1979) posit that both aptitude and skill-related variables exert a direct effect on sales behavior/performance.

Walker et al. (1979) define role variables and perceptions as "the set of activities or behaviors to be performed by any person occupying that position" (p. 17). Consistent with research on role perceptions in a number of occupations, they may be influenced by role accuracy, perceived role conflict and perceived role ambiguity. These variables are also posited to exert a direct effect on sales behavior/performance.

Personal and organizational/environmental factors, by contrast, are postulated by Walker et al. (1979) to exert indirect effects on behavior/performance, as well as directly moderating the relationship between performance and effectiveness. In the Walker et al. (1979) model, personal and organizational/environmental variables are combined to reflect the fifth and sixth components of the model. In the Churchill et al. (1985), meta-analysis, however, personal factors are examined independently of organizational/environmental factors. Personal factors identified in the

Figure 2 Sales behavior, performance and effectiveness model
(From Walker et al., 1979)



Churchill et al. (1985) study include variables often assessed using biographical information forms, such as age, height, sex, race, marital status, and number of dependents. In comparison, organizational/environmental variables may include salesperson territory, intensity of competition, and type of selling job.

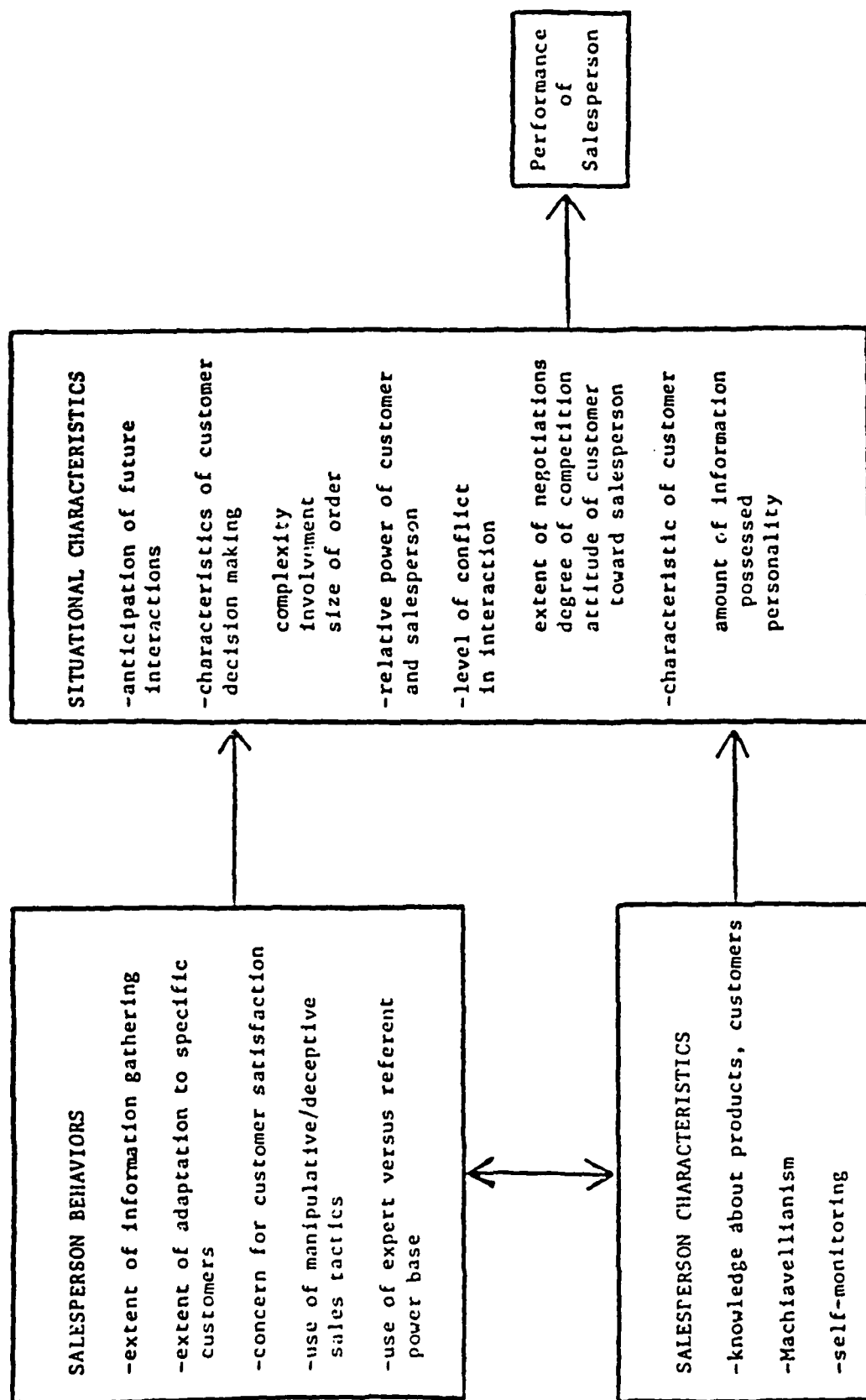
The Weitz Model. Another conceptual model of sales effectiveness has also been recently suggested by Weitz (1979). In contrast to the Walker/Churchill conceptualization, Weitz emphasized moderating effects of the situational characteristics on the relationship between salesperson behaviors/characteristics and sales performance. Based on inductive reasoning following a review of the previous empirical research examining the effects of situational variables, Weitz (1979) argued that individual traits and behaviors may be more or less powerful determinants of behavior depending on the type of sales environment. Weitz (1979) proposed a contingency approach to investigating characteristic-situation, behavior-situation, and characteristic-behavior relations in different sales positions. In particular, he suggested several research hypotheses focusing on interpersonal skill competencies, customer type, and nature of the salesperson-customer relation.

Based on previous empirical literature investigating the relatively low predictive utility of dispositional characteristics, Weitz (1979) suggested that greater attention be focused on how specific interpersonal characteristics interact with situational opportunities and constraints to affect sales performance. In this regard, the Weitz model appears to emphasize the importance of interpersonal skills in clarifying the behavior-performance linkage. Figure 3 summarizes the Weitz model and the major variables comprising each factor.

Suggested Revision of the Walker et al. Model. The Walker et al. model assumes that person factors such as motivation and aptitude impact on behavior which in turn influences performance. An alternative model of the personal characteristics behavior-performance linkages is presented in Figure 4. Consistent with the Walker et al. (1979) discussion, the modification of the Walker et al. model that we propose explicates the multidimensional nature of both the behavioral and performance constructs. In this alternative model, behaviors refer to the domain of sales-related activities, such as number of calls made and number of peer consultations. Multiple behaviors comprise the basic units of multiple sales skills that define the performance domain. Environmental factors are posited to affect sales effectiveness. Following Campbell et al. (1970), performance is evaluated behavior, but effectiveness depends on situational factors in addition to person factors.

Route difficulty and salesperson territory are examples of two such environmental factors that have been identified by several researchers (cf. Cravens & Woodruff, 1973). The conceptual distinction made between sales performance and effectiveness allows for a more complete specification of the diverse individual, environmental, and organizational factors that might influence effectiveness criteria. The distinctions suggest that empirical evidence on predictor-performance relations obtained using sales effectiveness criterion may be inappropriate if the variance in the criterion is largely due to factors beyond the individual's control. Further,

Figure 3 Elements of contingency theory of salesperson performance
(From Weitz, 1979)



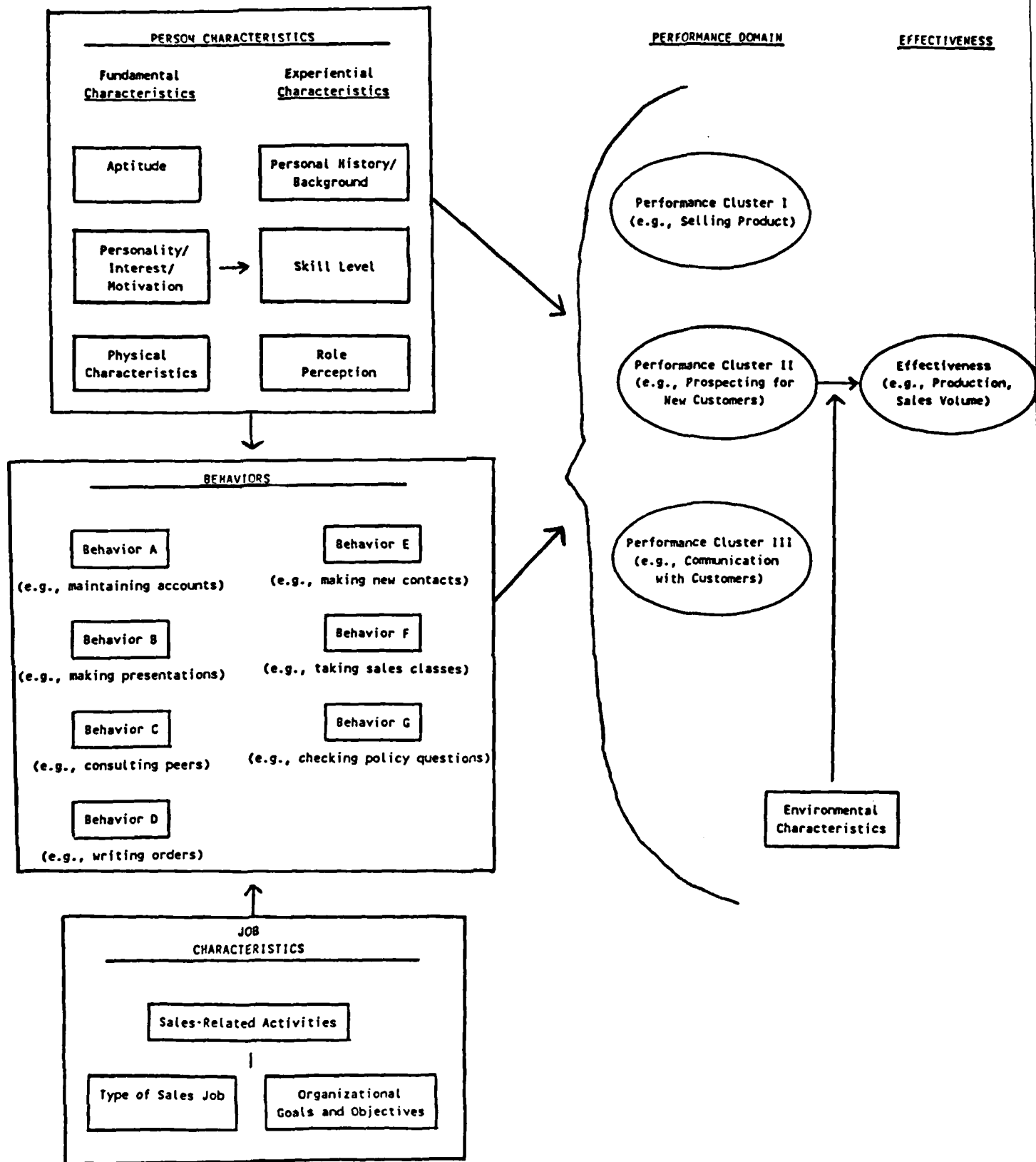


Figure 4. Expanded Framework of Sales Performance

if external factors are associated with specific but unidentified groups of individuals, (for example, individuals with larger territories), prediction of sales effectiveness may be hampered by between-group differences.

Additionally, in our proposed model, we depict the various components of the predictor domain (e.g., personality) as influencing sales performance directly. These person variables to some extent affect the specific behaviors exhibited on the job, but more influential will be these variables' effect on how well the salesperson performs in each of these activities. And, as mentioned, effectiveness is a result of both the person's performance (i.e., evaluated behavior) and situational/environmental factors.

A Meta-Analysis of Sales Performance Determinants. Churchill et al. (1985) conducted a meta-analysis of research on six determinants of sales performance to investigate the strength of hypothesized determinant-performance relations. Using the methodology recommended by Hunter, Jackson, and Schmidt (1982), Churchill et al. (1985) calculated the observed and corrected mean correlations between criterion measures of sales performance and effectiveness for each of six factors: 1) aptitude, 2) skill level, 3) motivation, 4) role perceptions, 5) personal variables, and 6) organizational/environmental variables. They also examined the potential moderating influences of customer type, product type, and type of dependent performance measures used as the criterion.

The findings obtained were consistent with previous conclusions based on qualitative reviews of the literature (see Churchill, Ford, & Walker 1981). Relatively low average correlations were obtained between each latent factor and the criterion construct (range of average corrected correlations obtained across studies -- .193 to .379). Examination of total variance in the observed correlations not due to sampling error indicated that personal factors were most strongly predictive of performance (corrected variance = .04), followed by skill levels, role perceptions, motivation, organizational/environmental factors, and aptitude. In addition, product type moderated the influence of the association between these factors and criterion effectiveness, while type of criterion employed (e.g., supervisor or peer ratings, corrected or uncorrected objective measures, etc.) did not moderate the predictor-criterion correlations. Other findings obtained in the Churchill et al. (1985) meta-analytic study are presented in later sections.

The results obtained in the Churchill et al. (1985) meta-analysis suggest that no one component accounts for an impressive amount of the variation in the criterion measures of sales performance/effectiveness. As Churchill et al. (1985) note, however, the results are subject to several limitations. They suggest that meta-analytic methods do not address the restriction in range associated with the almost exclusive use of concurrent validation designs in the sales literature. As a consequence, poor performers were likely to be substantially underrepresented in the studies included in the meta-analysis (Churchill et al. 1985). In addition, the authors note that criterion measures used across studies may differ substantially in terms of their relation to the underlying construct of sales performance/effectiveness. Churchill et al. (1985) examined the potential moderating effect of type of criterion used: objective criteria of sales effectiveness with and without control for externalities; subjective self-

report measures; and subjective managerial and peer rating criteria. Although Churchill et al. (1985) did not find that type of criterion measure moderated observed predictor-performance relations, the potential influence of criterion quality was not examined. It seems reasonable to expect differential predictive efficiency of the various determinants based on different degrees of criterion measurement quality. As Churchill et al. (1985) conclude, some correlations might be low because of poor criteria while other correlations may be higher due to better criteria.

Two additional important concerns related to the validity of the meta-analytic findings were not addressed by Churchill et al. (1985). First, data presented suggest that correlations examined were in some cases non-independent. For example, in examination of the effects of role perceptions, the authors employed 50 correlation coefficients derived from only four studies. As a consequence, resulting variance estimates are suspect due to the nonindependence of the correlations. Second, the variable level of specificity across groups of predictors makes comparisons of variance estimates inappropriate. For example, comparison of CV ratios between aptitude and personal predictors is not reasonable given the relatively broad definition of personality predictors compared to predictor variables in the ability domain. These methodological problems in the Churchill et al. (1985) meta-analysis strongly suggest that the results of the analysis must be viewed with caution and that interpretative conclusions based on this analysis alone are inappropriate at this point. As Churchill et al. (1985) imply, additional consideration of the predictor and criterion measures, theory development, and greater attention to methodological issues is desirable for establishing the foundation upon which to conduct a comprehensive meta-analysis in this area.

Summary. Two major problems arise in attempting to understand and predict sales effectiveness. First, as Walker et al. (1979) indicate, there has been little systematic attention given to distinguishing among sales behaviors, skills, performance, and effectiveness. Until recently, investigation of sales success have been largely atheoretical and unrelated. Two major theoretical models related to sales performance and sales effectiveness have emerged. The Walker et al. (1979) and Churchill et al. (1985) models identify six major determinants of behavior/performance and sales effectiveness. The model posited by this group focuses on the primary determinants of behavior/performance and attempts to distinguish clearly between behavior, performance and effectiveness. Our revision of this model emphasizes a direct link between personal characteristics variables and performance and re-asserts the Campbell et al. definitional distinction between performance and effectiveness by positing that situational/environmental factors, often beyond the salesperson's control, influence effectiveness.

In contrast, Weitz (1979) suggests a more micro-analytic model of sales performance. In the Weitz model, behaviors, traits, and situational characteristics are delineated in terms of their interactive influences and relationship to sales performance. The Weitz model complements and importantly extends the Walker/Churchill model by further specifying non-cognitive variables centrally related to performance.

All of these models represent useful heuristic frameworks for moving toward a more comprehensive theory of sales performance. Although the

models may require substantial modification on the basis of empirical findings stemming from theory testing, they clearly indicate the importance of investigating multiple and interactional determinants of sales behaviors, performance, and effectiveness.

Criterion-Related Issues in Research on Determinants of Sales Effectiveness

Researchers have noted a number of difficulties associated with the use of criterion measures of sales performance (e.g., Landy & Farr, 1983). These difficulties tend to fall into three, interrelated categories: conceptual; methodological; and pragmatic. Most problematic is the lack of agreement about what constitutes the "appropriate" criterion of sales effectiveness or success.

Understanding Job Performance. Lack of attention to criterion validity appears to be due in part to the implicit assumption that quantitative and objective measures of sales effectiveness do indeed fully represent the latent constructs under investigation. Yet, the majority of studies investigating predictor-performance relations for sales personnel do not address the construct validity of the criterion measures designed to reflect sales success. Although some studies do report the reliability of criteria, the assumption of researchers using objective measures of sales effectiveness appears to be that such measures directly reflect the effectiveness construct. Examination of criterion construct validity appears most frequently in studies using subjective performance criteria and when researchers have focused on the link between performance and sales effectiveness outcomes.

With respect to understanding dimensions of sales performance, there appears to be wide agreement that sales success reflects the cumulative results of an individual's activities on a number of dimensions. Fortunately, some attempts have been made to identify dimensions of sales performance. These studies involve for the most part conducting job analyses of sales work or examining correlations between sales dimensions to arrive at summary performance indices.

Job analysis has long been advocated as a useful approach for identifying behavioral factors that determine sales performance (Husband, 1949). As an example of this approach, Kirchner & Dunnette (1957) used the critical incidents method to identify factors involved in industrial sales. Ninety-six usable incidents were generated by 85 sales managers. Rational analysis of these incidents yielded fifteen factors related to job behavior of effective salespersons: following-up; planning ahead; communicating necessary information; carrying out promises; persisting on tough accounts; pointing out uses for other company products; using new sales techniques/methods; preventing price-cutting; initiating new sales ideas; knowing customer requirements; defending company policies; calling on new accounts; helping customers; and showing a non-passive attitude. Also, in an investigation of assessment center validity for predicting candidates' later success in sales, Bray and Campbell (1968) employed a composite criterion measure of sales success based on five dimensions of job behavior: preparation; usage prospecting; recommendations; closing; and implementation. These dimensions were presumably derived from job analysis work, although

the authors did not specify the exact procedures used.

As mentioned, correlational and factor analytic studies have also attempted to identify dimensions of sales performance. Behrman and Perreault (1982) identified seven basic dimensions of sales effectiveness in industrial sales from the previous research literature, and wrote items tapping these dimensions. Examples of items written include working out solutions to a customer's questions or objections, making sales of products with the highest profit margin, and operating within the budgets set by the company. The items were administered to sales personnel and their managers, and a final set of items tapping seven dimensions was derived from factor analysis of questionnaire responses. The factors identified in the final questionnaire were: achieving quantity and quality sales objectives; controlling unnecessary company expenses; developing and maintaining customer goodwill; providing information to the company and following company policy; developing and using technical knowledge; giving high quality sales presentations and working well with customers; and working well with other personnel in the firm.

In another study, Baier and Dugan (1957) examined the relationships between a variety of sales performance measures and a composite criterion for life insurance agents. Performance indices included a measure of life-insurance knowledge, performance in job training, five measures of commissions, and seven measures of the state of each agent's policies in force (e.g., policy lapse rate). Performance indices showed generally significant correlations with the composite measure, with average sales commission correlating .66 with the composite. Correlations between selected personal factors and the performance dimensions suggested that amount of personal life insurance owned and voluntary enrollment in training are more strongly related to performance than technical knowledge.

Finally, Rush (1953) examined the factorial structure of thirteen performance criteria developed to assess industrial sales performance. Criteria used included quantitative scores on sales volume, percent of quota achieved and number of sales, training school grades, and managerial ratings on nine dimensions. Reliability of the criteria ranged from .47 to .92. Factor analysis results suggested four factors: objective achievement; learning aptitude; general reputation; and sales techniques and achievement.

Differences in the nature of the sales job under investigation and the relatively small number of empirical studies pertaining to dimensions of sales performance do not presently allow for firm conclusions regarding the basic dimensions of sales performance. However, several trends may be noted. Results obtained in both job analysis and factor analytic studies suggest several key cognitive and behavioral dimensions including the individual's knowledge of the product, interpersonal communication skills both within the company and in customer interactions, and initiative in pursuing sales accounts. The next section distinguishes among types of criterion measures that have been used to assess performance and effectiveness.

Distinctions Among Criterion Measures. As noted previously, the low correlations found in the Churchill et al. (1985) meta-analysis may have in part resulted from the use across studies of criterion measures that differ

substantially in their relation to the underlying constructs of sales performance and sales effectiveness. Two basic distinctions may be made between existing measures: the use of objective versus subjective criterion measures and the use of adjusted versus unadjusted indices of sales success. "Objective" criterion measures of sales performance such as total sales volume are a function of both individual and organizational/environmental factors. As a consequence, such measures may not accurately reflect variation in sales performance due to individual differences in behavior and/or performance. Cravens, Woodruff and their colleagues (Cravens & Woodruff, 1973; Cravens, Woodruff, & Stamper, 1972) have examined the influence of a variety of environmental and organizational variables and obtained findings indicating that "benchmark standards," that adjust for factors such as market potential and territory workload were more consistent with subjective ratings of sales performance than simple objective measures. Their findings have prompted a number of researchers to distinguish between "adjusted" and "unadjusted" measures of sales effectiveness. Unfortunately, however, very little research has been done to examine how different methods of "adjusting" effectiveness measures to account for factors beyond the individual's control influence the validity of the criterion.

We found only one study that has explicitly examined the relationship between adjusted and unadjusted effectiveness criterion measures. Miner (1962), in a study investigating the predictive efficiency of personality and ability factors among industrial oil salespersons, examined composite sales performance based on an average of the percent gain or loss for a four-year period for these salespersons. He obtained a correlation of .93 between the unadjusted composite performance index and an adjusted performance index that statistically controlled for sales territory.

Unfortunately, an inherent problem with using a norming strategy to adjust objective sales data has to do with the norming process itself. If large sales territories with many salespersons are used to accomplish the norming, there may be meaningful differences within territories with respect to opportunity to perform. If smaller territories are used for the norming, then the norms tend to be unstable because the mean sales performance indices are based on too few salespersons. In other words, how one does the adjusting may be as important as whether to adjust. However, the development of norming strategies that overcomes these types of problems is likely to be quite useful.

Another kind of sales performance measure that attempts to control for organizational/environmental factors has also been employed. This criterion measure involves calculation of the percentage of quota that an individual attains in a given performance period. Whereas adjusted effectiveness criterion scores account for environmental variability statistically, percent quota attainment scores result in criterion scores presumably already adjusted for environmental factors. As Oliver (1974) notes, quotas are frequently established by supervisory personnel to provide the salesperson with an objective or goal for performance within a specific set of environmental constraints. Clearly, however, the construct validity of percent quota criterion measures will depend in large part on how accurately established quotas reflect environmental conditions. Use of quotas to spur performance motivation, for example, may result in criterion contamination.

Subjective ratings of sales performance have also been employed as criteria in a number of studies (e.g., Cotham, 1969; Kirchner, McElwain, & Dunnette, 1960; Merenda & Clarke, 1959). These ratings offer a distinct advantage to clarifying behavior-performance linkages since they provide multidimensional evaluations of performance. Ratings are typically made along a number of behavioral/trait dimensions and are often summed to provide an overall performance score.

An important issue concerning the use of subjective ratings of performance concerns how the subjective rating is obtained. Subjective ratings may be obtained by managerial personnel, peers, independent observers, and/or self-report. Each rating source has its advantages and disadvantages. Supervisory ratings typically come from persons with good experience in rating performance, but supervisors may be less familiar than other sources with ratees' day-to-day activities. Peers are usually very familiar with incumbents' actual behavior related to performance, but they often have less experience (than supervisors) in completing ratings and are more likely to provide lenient (higher than deserved) evaluations. Observers may be less prone to common rating errors (e.g., halo and leniency) and be more objective, but they lack the longer term knowledge of ratees' performance over time. Finally, self-ratings obviously come from a source that should know well the true criterion performance levels, but these ratings tend to be inflated (i.e., more lenient) and unrelated to peer or supervisor ratings (Landy & Farr, 1983).

In the prediction of sales success, most research has relied on managers or supervisors as sources of performance ratings. A few studies, however, have investigated the use of ratings made by independent observers (e.g., Bray & Campbell, 1968) or self-reports (e.g., Behrman & Perreault, 1982).

In addition to being aware of inherent problems with objective and subjective indices, it is important to recognize that these two types of sales performance measures may not necessarily tap the same underlying constructs of success in sales. The likelihood of high correlations across the two types of criteria is therefore reduced by both of these factors. Summary objective indices such as sales per unit time (corrected or uncorrected) may provide a global, overall indicator of sales performance, but effectiveness in individual aspects of the job is not indexed. Also, even a global measure of sales success will often fail to tap important parts of the job. Consider, for example, identifying new customers for future selling activities and maintaining good relations with existing customers. These aspects of a sales job are usually important, but would not be directly indexed by so-called objective measures.

Ideally, ratings can tap these (and other) individual dimensions of sales performance and thus may pick up some of the relevant criteria not covered by summary objective indices. On the negative side, ratings are often in part a function of liking and getting along well with the rater, and this may or may not be correlated with actual performance. In sum, problems with objective and subjective criteria and the fact that the two general measurement methods probably measure somewhat different underlying performance constructs provide reasons to believe relationships between objective and subjective criterion measures will not be very high (e.g.,

Borman, White, Gast, & Pulakos, 1985).

Several studies bear directly on the relationships between objective and subjective criteria. Behrman and Perreault (1982) examined correlations between quantitatively-derived sales performance indices and overall performance ratings made by managers and through self-report. Quantitative ratings correlated .21 with overall self-ratings and .23 with overall managerial ratings. Managerial ratings were correlated .26 with self-ratings. The low correlation between managerial and self-report ratings on the same instrument suggests the presence of rating source bias. More importantly, however, low correlations obtained between both types of subjective ratings and the objective criterion suggests that, independent of source effects, subjective and objective measures did not similarly tap the same criterion constructs.

Bray and Campbell (1968) also found little relationship between supervisory ratings and ratings of sales performance by an independent team of observers. In this study, observer ratings of performance were based on judgments of behavioral adequacy in five identified content areas (mentioned previously in this report): preparation; usage prospecting; recommendations; closing; and implementation. Supervisory ratings of performance, however, were based on ratings of the salesperson as a communications consultant. The relatively weak relationship between observer ratings and supervisor ratings is thus not surprising, because of the different dimensions used by the two rating sources.

One other factor may contribute to low relationships between subjective and objective criterion measures. There might be low correlations between different objective indices of performance, because of poor reliabilities for these measures or because the different objective indices are themselves tapping different aspects of performance. Matteson, Ivancevich, and Smith (1984) found correlations ranging from .63 to .81 between three unadjusted effectiveness indices of life insurance sales performance. Kirchner (1960) reported intercorrelations of five objective measures of industrial sales performance ranging from .53 to .95. When Miner (1962) examined both adjusted and unadjusted component and composite measures of effectiveness among industrial oil salespersons, he found correlations between the three sales effectiveness measures ranging from .26 to .81 for unadjusted measures and from .33 to .83 for adjusted measures. Overall, these findings are mixed, suggesting that different objective sales criteria sometimes correlate highly, and at other times relationships are low. The magnitude of these correlations between objective criterion measures are likely to vary depending on the nature of the measures themselves and the particular sales job being studied.

Finally, in a study of industrial salespersons, Kirchner (1960) examined correlations among 21 objective performance variables gathered from company records and 19 variables obtained from performance appraisal records. Results showed a strong positive relationship between objective indices and subjective performance ratings. The pattern of findings indicated that ratings of volume, quality, communicating, developing, asking for order-closing sales, motivation-drive, and persuasiveness were relatively highly correlated with objective performance measures. This study provides the only evidence we are aware of that objective and subjective criterion measures might be tapping the same underlying performance

constructs.

In an attempt to circumvent difficulties associated with using sales effectiveness criteria influenced by factors outside the individual's control, Ghiselli (1969) and Waters and Waters (1970) used job survival as the criterion for evaluating the validity of specific predictors of sales success. The use of a survival criterion assumes that persons who remain with the organization perform more effectively than persons who leave. Ghiselli (1969) used job survival at three years as the sole criterion for job success among stockbrokers, while Waters & Waters (1970) used a two-part criterion in which success was defined as both job survival at 6 months and percent quota attainment above the mean. A two-part criterion was also used by Mayfield (1972) in another study on the predictive efficiency of peer nominations. In the Mayfield (1972) study, individuals were classified as successful if they continued to remain on the job after one year and had a production volume above the median volume attained by all job survivors.

Merenda & Clarke (1959) also examined job survival as a criterion in their investigation of personality factors as predictors of sales success among life insurance agents. Individuals were classified as successful if they 1) left the company before the end of the third year to become an agent or supervisor of another company, 2) advanced to a supervisory position within the company, or 3) attained their quota or achieved above a specified production volume in each of the three years. Kerber et al. (1985) examined sales performance and turnover at 6, 12, and 18 months as a function of specific job activities and personal characteristics. Sales performance was significantly and negatively related to turnover. The Kerber et al. (1985) findings suggest that persons who leave the company are less effective performers compared to persons who remain on the job. Although these results provide support for the use of job survival measures as criterion in studies of predictor-performance relations, the job survival criterion does not provide any information about the actual behaviors associated with sales effectiveness.

Summary. Table 1 presents a summary of the diverse criterion measures used in the studies reviewed. As shown, the majority of studies used quantitative, objective measures (adjusted or unadjusted) of sales effectiveness. A number of researchers used several criteria (e.g., Cotham, 1969; Miner, 1962). Relatively few studies using multiple criterion measures reported correlations between these measures.

Overall, there appears to be little consensus regarding the appropriate criterion measures for sales performance and effectiveness. When explanations are provided for why particular criterion measures were employed, they often refer to data availability and precedent based on previous research. Criterion reliability and validity are infrequently discussed, making it difficult to conclude whether similar or different constructs are being measured across different studies.

Several issues arise when considering the appropriateness of various criterion measure of sales performance and effectiveness. First, objective criteria often provide a readily available global indicator of sales effectiveness but will not provide measures of specific behaviors related to

Table 1

Criterion Measures Used in Studies Investigating Determinants
of Salesperson Behavior, Performance and Effectiveness

Criterion

I. Unadjusted Objective Effectiveness Measures

Baehr & Williams (1968)	Sales volume ranking
Bagozzi (1978)	Maximum sales volume ranking
Bagozzi (1980)	Dollar volume of yearly sales
Baier & Dugan (1957)	Dollar volume of yearly sales
Cotham (1969)	Total % Par
Cotham (1969)	Achieved sales volume
French (1960)	Sales volume
Harris & Vincent (1967)	Sales volume ranking
Hughes (1956)	Policies produced
Kennedy (1958)	Total insur sold-cancell.
Kerber, Campbell, & Lapide (1985)	Composite performance
Lamont & Lundstrom (1977)	Composite performance
	Sales volume
	Percent of quota attained
	Earnings
Mayfield (1972)	Amount of insurance sold
Matteson, Ivancevich, & Smith (1984)	Total policies sold
Oliver (1974)	Production volume
Rush (1953)	Average monthly sales volume
	Average no. of sales

II. Adjusted Objective Effectiveness Measures

Cotham (1969)	Adjusted sales volume
	Adjusted earnings
Cotham (1969)	Adjusted sales volume
	Adjusted earnings
Dubinsky & Hartley (1985)	Percentage of dept. sales
Matteson, Ivancevich, & Smith (1984)	Policy sold
	Premium income
Miner (1962)	Sales
Mosel (1952)	Selling cost per cent
Pace (1962)	Net dollar sales/hours selling
Zdep & Weaver (1967)	Commissions adjusted by experience

Table 1 (cont.)

	<u>Criterion</u>
<u>III. Objective Performance Measures</u>	
Harrell (1960)	Percentage of attained quota
Merenda & Clarke (1959)	Quota attainment
Meranda, Clarke, & Hall (1961)	Percentage of quota attained
Oliver (1974)	Percentage of quota attained
Rush (1953)	Percentage of quota attained
	Training school grades
Waters & Waters (1970)	Percent of quota + survival
<u>IV. Subjective Performance Measures</u>	
Baehr & Williams (1968)	Managerial ratings
Bray & Campbell (1968)	Team ratings
Cotham (1969)	Managerial ratings
Dunnette & Kirchner (1960)	Managerial ratings
Gable, Mattheiss, & Muczyk (1984)	Managerial ratings
Harrell (1960)	Managerial ratings
	Team ratings
Kirchner, McElwain, & Dunnette (1960)	Managerial ratings
Lamont & Lundstrom (1978)	Managerial ratings
Merenda & Clarke (1959)	Promotion or job change
Meranda, Clarke, & Hall (1961)	Promotion or job change
Rodgers (1959)	Managerial ratings
Rush (1953)	Managerial ratings
Weitz (1978)	Managerial ratings
<u>V. Objective Behavioral Measures</u>	
Ghiselli (1969)	Job survival at 3 years
Kerber, Campbell, & Lapide (1985)	Job survival (6,12,18 mos)
Mayfield (1972)	Job survival (1 year)
<u>VII. Unknown</u>	
Greenberg & Mayer (1964)	Sales performance
Ruch & Ruch (1967)	Sales effectiveness
Tanofsky et al. (1969)	Sales production

sales performance. For example, the use of job survival as an objective criterion measure does not specify the sales activities individuals performed in the job. Several researchers have used adjusted objective criterion measures that take into account environmental factors beyond the individual's control (e.g., Cravens & Woodruff, 1972). Although these measures are likely to be an improvement over unadjusted objective measures, methodological problems in adjusting objective criteria must also be considered. Subjective ratings of performance have been frequently used as criteria of sales success and allow for more direct evaluations of performance on multiple dimensions. Although these ratings are likely to pick up important variance not tapped by objective measures, subjective measures may suffer from various rating errors and biases (e.g., Landy & Farr, 1983).

Research on Predictor-Performance Relationships Among Sales Personnel

Variables used to predict performance among sales personnel can be classified into one of four basic categories: biographical or personal history variables; personality/vocational variables; aptitude measures; and behavioral or skill-related measures. Predictor variables from each of these categories have been used in studies employing both objective and subjective performance and effectiveness criteria. In Table 2, a matrix is presented of empirical studies classified on the basis of the type of predictor and criterion measure used. The following section briefly describes the empirical research in each predictor category. Results of the Churchill et al. (1985) meta-analysis for predictor sets are then summarized at the end of each category.

Biographical and Personal History Variables

As shown in Table 2, most empirical research related to the prediction of sales performance has focused on biographical and personal history variables. Ease of item development and implicit theories about links between these kinds of variables and personality attributes thought to be related to sales success may account for why such variables have received wide attention. Variables comprising this category are, however, quite diverse, and are likely to differ in terms of the underlying dimensions they are intended to reflect. For example, height and weight index an individual's physical characteristics. Age may be viewed as related to the range of an individual's work experiences. Marital status and number of dependents might be conceptualized as indicators of stability and motivation to succeed. Formal education, college grades, and number of previous sales-related courses may reflect generalized aptitudes and abilities relevant to sales work. In contrast, previous sales experience may be thought to summarize experiences more directly related to sales performance. This broad delineation of personal history variables implies multidimensionality across biographical/personal factor predictors. As a consequence, predictive validity of individual variables contained within this category may differ substantially as a consequence of predictors used, the type of sales activities under investigation, and the type of criterion being predicted.

Table 2

Matrix of Empirical Studies on Prediction of Sales
Success by Predictor and Criterion Type

PREDICTOR TYPE	CRITERION TYPE			
	<u>Subjective</u>	<u>Objective</u>	<u>Subjective and Objective</u>	<u>Unknown</u>
Biographical/ Personal History	Kerber et al (1985) Kirchner et al. (1960)	Baier & Dugan (1957) French (1960) Harris & Vincent (1967) Kirchner et al. (1960) Mayfield (1972) Mosel (1952) Waters & Waters (1970)	Merenda & Clarke (1959) Merenda et al. (1960)	Tanofsky et al.
Personality/ Vocational	Dunnette & Kirchner (1960) Gable et al (1984) Rodgers (1959) Ruch & Ruch (1967)	Bagozzi (1980) Ghiselli (1969) Hughes (1956) Matteson et al. (1984) Miner (1962)	Baehr & Williams Harrell (1960)	Green- berg & Mayer (1964) Ruch & Ruch (1967)
Biographical and Personality		Cotham (1969) Rush (1953) Waters & Waters (1970)	Lamont & Lundstrom (1977)	

Table 2 (cont.)

PREDICTOR TYPE	CRITERION TYPE			
	<u>Subjective</u>	<u>Objective</u>	<u>Subjective and Objective</u>	<u>Unknown</u>
Aptitude	Bray & Campbell (1968)	Bagozzi (1980) Baier & Dugan (1957) Miner (1962)	Harrell (1960)	
Skill	Bray & Campbell (1968) Kerber et al. (1985) Kirchner (1960)	Pace (1962) Dubinsky & Hartley (1985) Weitz (1978)		

As an example of this, Rush (1953) obtained evidence to suggest that personal history factors differ according to the criterion constructs they are most effective in predicting. Rush examined the predictive efficiency of several personal history variables, including age, marital status, number of dependents, previous sales experience, college grades, and number of accounting courses, against four factors derived from objective and subjective criterion measures of performance in industrial sales jobs. Results indicated a distinct pattern in the way that different personal history variables were related to each of the four composite criterion factors. Age, for example, was positively related to general reputation but was negatively associated with learning aptitude. Previous sales experience correlated positively with objective achievement but was negatively associated with learning aptitude. Number of previous accounting courses was positively related to learning aptitude but negatively associated with objective achievement and general reputation.

Overall, the vast majority of research studies investigating the predictive validity of biographical and background data against sales performance have been empirically based and have focused on a small number of specific biographical or background variables. The following discussion summarizes empirical research pertaining to the most frequently examined biographical and personal history variables: age; educational level; family history and status; and previous selling experience.

Age. Weitz (1979) has suggested that age might be related to sales performance in that it might be positively associated with customer respect and perceptions of the sales representative as knowledgeable and expert. Results of research investigating the predictive validity of age, however, provide inconsistent results.

A number of studies have found that age was not a useful predictor of performance or effectiveness criteria. Cotham (1969) examined age as a predictor of subjective and objective measures of sales success among retail appliance sales personnel. He found that age was significantly negatively related to performance ratings, positively related to an unadjusted measure of sales volume, and unrelated to adjusted objective measures of sales volume and earnings. Lamont & Lundstrom (1977) reported that age was not a significant predictor of either subjective or objective performance criteria. French (1960) also reported no significant association between age and production among retail sales personnel. Waters and Waters (1970) found a nonsignificant correlation between age and a composite survival/objective quota performance criterion for industrial sales personnel.

Merenda and Clarke (1959) examined the predictive efficiency of a variety of personal history variables and personality characteristics in a discriminant analysis of successful and unsuccessful life insurance agents. Age was shown to discriminate the two groups only at extreme ages. Persons over age 45 or below age 25 at time of hire were less likely to succeed as life insurance salesmen when job survival was used alone as the criterion. In a subsequent cross-validation study, however, Merenda, Clarke and Hall (1961) found that age was not a significant predictor of sales effectiveness. Tanofsky, Shepps, and O'Neill (1969) examined six biographical predictors of life insurance sales success using a criterion production measure. They found that age did not account for a significant portion of

variance in the criterion.

By contrast, some studies have reported positive and significant association between age and sales performance criteria. Mayfield (1972) examined personal variables and peer nomination scores as predictors of job survival and an objective production criterion for life insurance agents. Age was positively correlated with job survival at six months ($r = .18$) and one year ($r = .24$) but was not correlated with the production measure. Mosel (1952) found a significant difference in age between retail sales personnel who proved to be successful or unsuccessful based on an unadjusted sales dollar volume criterion. Consistent with the results obtained by Waters and Waters (1970), sales success was most frequently associated with persons in the middle-age range (35-54 years old). Kirchner, McElwain, and Dunnette (1960) discovered a positive relationship between age and supervisor ratings of sales performance between 25 and 40 years of age. Ratings were negatively related to age after 40. Kirchner et al. (1960) note, however, that age accounted for less than 10 percent of the variance in sales performance ratings. And finally, Rush (1953) found that age was positively associated with a general reputation composite criterion factor derived primarily from subjective performance ratings.

Educational Level. Formal educational level is another personal history variable that appears to have been of substantial interest to researchers interested in the prediction of sales success. Lamont & Lundstrom (1977) suggest that educational level may be positively related to product knowledge, which in turn might be associated with sales performance. Similar to the findings obtained in investigations of the age-performance linkage, however, empirical research results are mixed and suggest that this variable is generally not a powerful predictor of sales performance.

Rush (1953) found that number of accounting courses was negatively correlated with an objective achievement factor. Cotham (1969) found that formal education was not significantly correlated with performance ratings or adjusted objective criteria, but that formal education was correlated .29 with an unadjusted sales volume criterion. Lamont & Lundstrom (1977) found that educational level was generally positively, but not significantly, related to objective or subjective criterion measures. French (1960), Tanofsky et al. (1969), and Waters and Waters (1970) reported no significant associations between formal education and criterion measures of sales success. Baehr & Williams (1968) examined the predictive validity of composite school and higher educational achievement factors against subjective and objective criterion measures of sales performance among manufacturing sales personnel. Achievement-related items, such as academic achievement in high school and technical accomplishments, were found to be largely unrelated to the criterion measures.

In contrast, Mosel (1952), Weaver (1969) and Merenda and Clarke (1959) found significant positive associations between educational level and sales criterion measures. Merenda and Clarke (1959) showed that formal education level was a useful predictor of a composite criterion when combined with other personal history variables. Merenda, Clarke and Hall (1961) replicated this finding in a subsequent cross-validation study.

Family History and Status. Interpersonal stability and adjustment, as indexed by marital and family responsibilities, has been viewed as positively related to sales performance. Again, however, the empirical findings do not provide clear support for this hypothesis. Baehr and Williams (1968), Cotham (1969), Merenda and Clarke (1959), Rush (1953), and Tanofsky et al. (1969) failed to obtain significant relationships between marital status and criterion measures of sales performance. On the other hand, Mosel (1952), reported a significant difference between the marital status of high and low performers.

Baehr and Williams (1968) found a significant difference in the expected direction between high and low sales performance groups for items loading on an early family responsibility factor, defined as early marriage, establishment of a family, and demonstration of competence in handling family financial affairs. Cotham (1969), Merenda and Clarke (1959), and Rush (1953) reported no substantial relation between number of dependents and sales performance. Finally, Mosel (1952) and Tanofsky et al. (1969) detected a significant difference between high and low performers on this variable.

Previous Selling Experience. Several studies have investigated the validity of previous sales experience or knowledge for predicting performance in sales jobs. In general, these studies have utilized objective measures of sales performance as criteria. Rush (1953) found that previous sales experience was strongly correlated with objective achievement and negatively correlated with learning aptitude. Previous sales experience was unrelated to the other two factors examined. Cotham (1969) reported .43 and .30 correlations between amount of selling experience and unadjusted sales volume and adjusted sales volume, respectively. Mosel (1952) found a significant positive effect for years of previous selling experience using an objective unadjusted effectiveness criterion. Kerber et al. (1985) reported a significant negative correlation between months of prior selling experience and a composite performance criterion score for industrial sales representatives. Interestingly, however, Kerber et al. (1985) also found that prior selling experience was significantly and positively related to turnover. The authors suggest that this pattern of relationships may be a result of experienced sales personnel leaving both their previous jobs and the organization under study because of poor or declining performance.

At least three studies examined the correlation between years of service within the organization and sales performance. In contrast to the negative relationship obtained between previous selling experience and objective performance, Kerber et al. (1985) found strong positive correlations between tenure and composite measures of sales performance consisting of a number of accounts in the prior fiscal year and dollar amount of backlog orders. Baehr and Williams (1968) examined the relationship between sales tenure and performance as measured by the salesperson's ranking among members of the organization's salesforce. Maximum sales volume rank, reflecting the highest ranking that the individual had received over the past 10 years, or during the entire length of sales tenure if less than 10 years, was positively correlated with tenure ($r = .16$). Mean sales rank, defined as the average of yearly rank assignments made on the basis of annual sales volume was also positively correlated with tenure ($r = .18$). However, performance ratings, based on normalized

standard scores obtained from paired-comparison ratings by three judges, were not significantly correlated with tenure ($r = -.13$). Baier and Dugan (1957) found no relationship between years of employment and an objective effectiveness criterion.

Other Biographical/Personal History Variables. Researchers have also examined a number of other biographical variables in attempts to predict sales performance. In many cases, the basis for examining these variables was not explicitly discussed, and thus the research often lacks theoretical underpinnings.

Baier and Dugan (1957) found that amount of personal life insurance owned was significantly correlated ($r = .30$) with an objective effectiveness criterion. The authors suggest that this predictor-performance relationship reflects the importance of a sales person believing in the value of the product being sold. Cotham (1969) reported a significant positive correlation between social and civic club membership and an unadjusted effectiveness criterion ($r = .23$). Lamont and Lundstrom (1977) found a nonsignificant but negative correlation between such membership and both objective and subjective sales criteria. Number of outside activities was significantly and negatively related to sales criteria, with the exception of a positive correlation with new business conversions. Lamont and Lundstrom (1977) concluded that increasing amounts of outside activity involvement reduces the time available for customer contact and has a negative influence on sales performance.

Meta-analytic Findings on the Predictive Validity of Personal History Factors. Churchill et al. (1985) identified 407 correlations between personal history factors and sales performance. Aggregating across all categories of personal history variables, Churchill et al. (1985) obtained a simple mean correlation of .17, and a weighted (by sample size) mean correlation of .16. Correcting for measurement errors in both the predictor and criterion yielded a mean correlation of .29. Examination of the proportion of variance due to sampling error compared to the total observed variance indicated that relatively little of the total variance in correlations was due to sampling error (6 percent).

Product type was an important moderator of the personal factor-performance relationships. The corrected mean correlation was highest for studies involving service sales ($r = .43$) compared to consumer goods ($r = .29$) and industrial goods ($r = .21$). Customer type and type of dependent measure did not appear to exert a substantial moderating effect on the personal predictor - sales performance relationship.

Summary. The empirical and meta-analytic findings just discussed suggest that biographical and personal history variables are of limited effectiveness when used alone as predictors of sales success. On the other hand, the empirical evidence suggests that these factors may be important determinants of other variables that influence sales performance. As Churchill et al. (1979) suggest, personal variables are likely to exert indirect effects on sales performance. Thus, personal factors may function to influence other more powerful determinants of sales performance, such as motivation, personality, aptitude, and/or skill-related variables. Evidence to support this view was obtained in the Rush (1953) and Baehr and Williams (1967) studies investigating the factor structure of biographical

items. These results indicate high factor loadings for some personal history items on factors related to personality, motivation, aptitude, and achievement/skill. Further research is needed to map relationships between personal factors and other determinants of performance and to identify the common constructs measured by these sets of variables.

A second issue, infrequently mentioned in the sales literature, concerns the restricted population upon which these studies have been performed. All but two studies investigating biographical and background predictors of sales success were conducted with predominantly or exclusively male samples. Further, although the studies did not typically report race composition of the sample, it is likely they were conducted with non-minority samples. Data reported by Strang, Churchill, and Collins (1976) indicate that only four percent of the total sales population was non-white in 1970. As a consequence, the generalizability of these findings to the prediction of sales success for females and minorities has not been tested.

Personality/Interest Variables as Predictors of Sales Performance/Effectiveness

Personality measures have frequently been used as predictors of sales performance. The assumption underlying use of these measures appears to be that such measures tap behavioral and attitudinal tendencies that influence sales performance. A number of different personality dimensions have been investigated in this regard. For purposes of the present review, traits used to predict sales effectiveness are broadly grouped into two classes. This grouping provides a useful heuristic by clarifying how personality characteristics may influence performance both on interpersonal dimensions of sales jobs and achievement related aspects of these jobs. Personality measures designed to assess empathy, forcefulness, dominance, aggressiveness, and the like refer to tendencies most likely to be manifested in the context of interpersonal interactions. In contrast, trait measures of ego drive, achievement motivation, and self-confidence/self-esteem reflect personality dimensions that are likely to exert a broad influence on achievement in sales work across different contexts. We first review research on the interpersonally oriented predictors and then turn to the broader achievement related predictors.

Empathy. Empathy refers to an individual's ability to assimilate and anticipate feelings of others. Weitz (1979) suggests that empathic salespersons should be more effective because of their greater appreciation of customer needs and subsequently better skill in interpersonal situations. Studies examining the predictive validity of personality measures assessing empathy provide mixed results. Cotham (1969) used four tests of empathy to predict sales effectiveness criteria. Only one measure, the Social Intelligence Test, was found to be significantly correlated ($r = .26$) with an adjusted, objective effectiveness criterion.

Greenberg and Mayer (1964) investigated empathy in three predictive studies of performance among automobile, life insurance, and mutual fund sales personnel. Empathy scores obtained using a proprietary measure were found to be useful in correctly classifying a large percentage of high and low performers. Unfortunately, lack of information regarding the empathy measure and the methodology used in the predictive studies causes problems

in drawing conclusions from this work.

Lamont and Lundstrom (1977) examined the predictive validity of the empathy construct using Hogan's Empathy Scale. They found that empathy was significantly but negatively related to managerial ratings of sales performance. Empathy scores were not related to objective sales effectiveness criteria. In contrast, Harrell (1960) found that the Tact and Social Diplomacy scales of the Social Intelligence Test successfully discriminated high and low performers on objective criteria.

Forcefulness and Dominance. A number of studies have examined traits related to forcefulness and dominance in interpersonal relations. Measures of these constructs consistently predict sales performance. Dunnette and Kirchner (1960) employed the Edwards Personality Preference Schedule to predict successful performance in industrial and retail sales. They found that dominance was related to subjective performance criteria for both samples (retail $r = .32$, industrial $r = .29$). Harrell (1960) used the Berneuter Personality Inventory scales to predict objective and subjective performance criteria. The Dominance, Aggressiveness, Stability, Self-confidence, and Drive scales were found to significantly differentiate high and low performers on objective criteria.

Hughes (1956) examined five of Murray's (cf. Hughes, 1956, p. 349) need categories: Dominance; Affiliation; Nurturance; Achievement and Endurance; and Deference. Scores on these variables were generated from responses to an open-ended question regarding why the individual felt he/she could be successful as a life insurance agent. A cross-validated correlation of .29 was obtained between a composite prediction equation composed of dominance, nurturance, and affiliation scores and an objective performance criterion.

Lamont & Lundstrom (1977) also examined dominance, endurance, and social recognition using items derived from Murray's transactional model of personality. Dominance and ego strength were found to be significant predictors of subjective ratings; social recognition significantly predicted scores on an objective effectiveness measure.

Two studies examined the predictive validity of traits assessed using projective methods. Miner (1962) investigated the usefulness of the Thematic Apperception Test (TAT) and the Picture Arrangement Test (PAT) in predicting objective sales performance. PAT scores were significantly related to performance in the cross-validation sample. In particular, better performers were characterized as defensive, self-confident, happy, less aggressive and maintaining a weaker superego compared to poorer performers.

Rodgers (1959) examined personality characteristics of twelve wholesale salesmen using a battery of projective measures. Performance ratings were used to dichotomize subjects into high and low performance groups. Results indicated that the successful salesmen were more dominant than those in the unsuccessful group. Comparisons for other variables showed no differences. Rodgers (1959) concludes that descriptions based on broad personality inventories are likely to be less effective predictors compared to measures that focus on specific job requirements.

Self-Esteem, Need for Achievement, and Confidence. Bagozzi (1980) examined need for achievement and task-specific self esteem as predictors of sales effectiveness among industrial sales personnel. Two measures, both consisting of self-report rating scale items, were used to assess each predictor construct; reliabilities of .60 for the need for achievement construct and .77 for task-specific self esteem measures were reported. Nonsignificant positive correlations were obtained between need for achievement measures and the effectiveness criterion (r 's = .13 and .19), while task-specific self esteem measures were significantly related to the criterion (r 's = .54 and .51). Bagozzi concluded that individuals with high task specific self-esteem demonstrate higher performance as a result of striving to behave in a manner consistent with self-concept.

Gable, Mattheiss, and Muczyk (1984) used the Ghiselli Self-Description Inventory to identify high and low performers in three samples using a discriminant analysis methodology. Initiative and decision-making approach were found to be most relevant in differentiating between successful and unsuccessful salespersons in two wholesale sales samples. High performing sales personnel were characterized by high scores on initiative and low scores on decisiveness. In contrast, supervisory ability, occupational level, and sociometric popularity were most predictive of the successful-unsuccessful dichotomy in an industrial sales sample. Self-assurance did not significantly contribute to the discriminant functions for either the wholesale or industrial samples.

Ghiselli (1969) examined the use of ten broad personality traits measured by a forerunner of the Ghiselli Self-Description Inventory as predictors of job survival among stockbrokers. Positive correlations were obtained between job survival and supervisory ability (r = .53) and achievement motivation (r = .40). Ghiselli reported a significant negative correlation between the criterion and need for job security (r = -.43). A significant, but weaker positive correlation (r = .29) was obtained between self-assurance and job survival.

Matteson, Ivancevich, and Smith (1984) investigated the relationship of Type A/B behavior to performance within a life insurance agent sample. They argued that the Type A construct captures many of the personality traits and personal behaviors frequently associated with sales success. Findings obtained showed no relation between this variable and objective effectiveness criteria. The authors suggest that the aggressive-competitive dimensions of the Type A construct might be an advantage in sales to some extent but may also operate to reduce interpersonal competencies important to sales success.

Social Adaptability. Ruch & Ruch (1967) investigated the validity of the K scale of the Minnesota Multiphasic Personality Inventory (MMPI) for predicting sales effectiveness. The K scale is thought to tap social poise and ability to provide "socially acceptable" responses. Ruch and Ruch found a correlation of .39 between the K scale and sales effectiveness. Further, correcting other MMPI scales with the K score substantially reduced their correlation with sales performance.

Dubinsky and Hartley (in press) examined adaptability to interpersonal contexts using Snyder's self-monitoring scale. Dubinsky and Hartley posited that salespersons high in self-monitoring would be more attentive

to social cues and would adapt their behavior more appropriately in situations with different interpersonal skill requirements. Results obtained in an investigation of 162 retail salespersons showed no direct effect for this variable on an adjusted objective performance criterion. However, self-monitoring was associated with role conflict. Persons attentive to the situation (high self-monitors) were more likely to experience role conflict and role ambiguity, and role ambiguity was positively associated with job performance.

Vocational Interests. Research on the use of vocational interest inventories as they relate to sales performance has tended to focus on distinguishing between response patterns in different kinds of sales jobs rather than in predicting sales performance per se. As an example, Witkin (1956) examined mean score differences on nine scales of the Strong Vocational Interest Blank (SVIB) across samples of specialty salesmen, route salesmen, and sales engineers. Similar patterns of responses were obtained for the three samples on the sales manager, real estate salesman, and life insurance salesmen scales. Significant differences between the groups were observed on the production manager, personnel manager, accountant, and office worker scales. Witkin suggests that the results obtained assist in identifying common and differentiating characteristics across types of sales jobs.

Dunnette and Kirchner (1960) used the SVIB to examine the differential predictive validity of these interest scales for industrial and retail salespersons. The two samples differed significantly on eighteen scales of the SVIB. In addition, the authors examined correlations between Strong scales and supervisory performance ratings for each sample. Correlations obtained were relatively low (range = $-.29$ to $.33$). As Dunnette and Kirchner (1960) point out, however, the scales that were most strongly related to the criterion were different for each sample, and this suggests that type of sales job importantly influences the predictive validity of vocational interest measures.

Miner (1962) used the Kuder Preference Record to predict sales success for industrial sales personnel. The Kuder Preference Record - Clerical was significantly correlated with a composite index of objective performance, but was not significantly related to the criterion measures in the cross-validation sample.

Meta-analytic Findings on the Motivation-Sales Performance Relation. Personality and vocational interest predictors have been variously classified as personal or motivational factors that influence sales performance. In their meta-analysis of determinants of salesperson performance, Churchill et al. (1985) do not specify exactly which variables were included in the motivational category. However, it is likely that personality and vocational interest predictors were classified as motivational. Results obtained, based on 59 correlations from the literature, indicate a relatively small association between motivational predictors and sales performance (weighted $r = .18$; attenuation corrected $r = .26$). Motivational variables accounted for approximately 7 percent of the total shared variance in the motivation - sales performance construct relationship. Further, comparison of the total variance in observed correlations to the estimated variance due to sampling error indicates that over 50 percent of the total observed variation is attributable to sampling error.

Examination of the ratios of average corrected variance obtained using moderator variables to the total corrected variance using the motivational predictor variable alone suggests that product type (CV ratio = .38) and customer type (CV ratio = .51) moderate the relationship between motivation and sales performance. With respect to customer type, the average corrected correlation was highest among individual and institutional customer samples ($r = .30$, $r = .33$, respectively) compared to the average corrected correlation obtained when customer type was not specified ($r = .10$). In terms of product type, the average corrected correlation between motivation and sales performance was strongest for industrial sales ($r = .37$), followed by consumer sales ($r = .29$), service sales ($r = .25$), and studies in which the product type was not specified ($r = .07$).

Aptitude Predictors of Sales Performance and Effectiveness

Several studies have examined the relationship between ability measures and sales performance. Harrell (1960) found that scores obtained on the Otis Test of Mental Ability predicted performance for industrial salespersons using adjusted objective performance and subjective performance criteria. Miner (1962) found that the Wechsler Adult Intelligence Arithmetic subtest was positively correlated with adjusted and unadjusted measures of sales effectiveness in a cross-validation sample. No other WAIS subscale measure was associated with these criteria. In contrast, Bagozzi (1980) found a negative relationship between verbal intelligence, as measured by the Borgatta's Word Association Form, and sales success.

Rush (1953) and Baier and Dugan (1957) examined the validity of school grades in predicting sales performance criteria. Rush (1953) found that business arithmetic and college grades were positively correlated with a composite objective effectiveness criterion. Baier and Dugan (1957) found that a test of life-insurance knowledge was positively correlated ($r = .12$) with a composite objective criterion of sales effectiveness for life insurance agents.

Bray and Campbell (1968) also found a positive correlation between four paper-and-pencil tests of ability and a performance rating criterion. They note, however, that the correlations obtained between these measures and the criterion were considerably lower than the correlation obtained between assessment center judgments and the criterion.

Meta-analytic Findings on the Aptitude-Performance Relation. Results obtained in the meta-analysis conducted by Churchill et al. (1985) suggest a relatively weak relationship between aptitude and performance. Based on an analysis of 820 correlations, Churchill et al. (1985) obtained a simple mean correlation of .17. Correcting for measurement error in both predictors and criteria resulted in a mean correlation of .19. The proportion of total variance due to sampling error compared to the total observed variance, .49, suggests that a substantial amount of the variance is due to sampling error. Further, the large ratios obtained between average corrected variance within moderator subsets and total corrected variance suggests that the weak relationship between this factor and sales performance holds across product types (CV ratio = 1.0), customer types (CV ratio = .97), and type of criterion (CV ratio = .91).

Skill Level as a Predictor of Sales Performance and Effectiveness

Walker et al. (1979) refer to skills as learned proficiencies related to performing necessary job tasks (p. 23). They note that although skills and aptitude variables may be correlated, skill measures involve assessment of performances on specific tasks, whereas ability measures assess enduring competencies. Skill levels may change rapidly with learning and experience.

Weitz (1979) and Walker et al. (1979) identified several potential clusters of skill variables related to sales performance, including skills associated with interpersonal influence and technical knowledge competencies. More specifically, interpersonal skills related to developing and maintaining positive interpersonal relations with peers and customers are suggested in a number of studies identifying activities that influence sales performance (Behrman & Perreault, 1982; Dunnette & Kirchner, 1959).

Weitz (1978) suggested that a salesperson's accuracy in perceiving customer needs and beliefs and his or her ability to communicate persuasively are importantly related to effectiveness in interpersonal sales activities. Weitz (1978) found that accuracy in understanding customers' beliefs was significantly related to sales performance. Similarly, Grikscheidt (1971; cf. Weitz, 1979) examined the ability to identify verbal and non-verbal cues following observation of a videotaped customer-salesperson interaction and found that high performance salespersons reported more non-verbal cues than did low performance salespersons. No differences between the groups were obtained regarding number of verbal cues identified.

Pace (1962) examined the relationship between oral communication skills and sales performance for house-to-house retail salespersons. Following an interview with the researcher, salespersons were assessed on six communication attributes: voice; language; bodily behavior; listening; personal attitudes; and initial impression. High performers made significantly more eye contact and obtained an overall higher impression score compared to low performers.

The Grikscheidt (1971), Pace (1962) and Weitz (1978) studies examined relationships between specific interpersonal skills and sales performance. As Weitz (1979) suggests, however, the predictive validity of measures that assess specific communication skills is likely moderated by type of sales job and the type of interpersonal influence required.

Finally, Kerber et al. (1985) obtained indirect evidence for the importance of adaptability as a skill related to sales performance in an investigation of job activity patterns among industrial sales personnel. In this study, salespersons were asked to maintain behavioral diaries for a two-week period. Analysis of diary information indicated that the most time-consuming activities involved customer contacts. Factor analysis of specific activities yielded three factors: time spent solving and resolving problems related to existing orders; time spent contacting customers; and time spent in interactions with coworkers. Sales performance criteria were positively related to time spent problem solving, but were not related to time spent on customer contacts (with one exception) or time spent dealing with coworkers. In addition, the authors found that after partialing out

the effects of sales experience at the company, time spent on problem-solving was not related to sales performance. They suggest that as representatives increase the number of sales made with experience, time spent on problem-solving also increases. The findings suggest that individual skills in problem-solving and adapting to changing environmental conditions may be importantly related to sales performance.

Meta-analytic Findings on the Skill-Performance Relationship.

Churchill et al. (1985) identified 178 correlations between skill variables and performance. The average magnitude of the correlations, corrected for sampling and measurement error, was .32. They note that substantially less of the total observed variance was due to sampling error (25 percent) in this relationship compared to total variance due to sampling error in the aptitude-performance relationship (49 percent). Churchill et al. (1985) suggest that skill related variables, influenced through training or experience, may be more highly related to performance than aptitude and personal history factors.

Consistent with the empirical findings cited above, product type appeared to moderate substantially the observed skill-performance relationship. Skill factors were most highly correlated with performance for personnel engaged in selling services (corrected average $r = .32$) compared to those performance in industrial sales (corrected average $r = .25$).

Summary and Conclusions

This review of the literature suggests several methodological problems associated with research on the prediction of sales performance and effectiveness. First, almost all studies used a concurrent validation design resulting in probable restriction in range. Second, very few studies conducted cross-validation analyses. Third, many studies did not report reliabilities for the predictor or criterion variables. Fourth, most studies investigated the validity of predictors with relatively homogeneous samples (i.e., white, male) so that the generalizability of findings to minority populations is questionable. Fifth, the size and type of sample used to investigate predictor-performance relationships varied widely across the studies reviewed. These methodological problems seriously limit conclusions that might be made regarding the prediction of sales performance.

Meta-analysis can, however, be used to address the last of the above problems. Specifically, the Churchill et al. (1985) analysis provides important information for understanding more about observed correlations between predictor measures and sales success. For example, in aptitude-criterion and motivation-criterion relationships, there is a large amount of variance in the observed correlations due to sampling error. This suggests that the effectiveness of these predictor types is likely affected by moderator variables. Consistent with this finding, Churchill et al. found that product type moderated the motivation-criterion relationship. On the other hand, neither product type, customer type, nor type of dependent criterion measure was found to moderate aptitude-performance correlations. Other variables that have not yet been studied, such as technical complexity of the job, may however moderate these relationships.

Results of the Churchill et al. (1985) meta-analysis provide a

concise, summary picture of the relationships between several extensively studied predictor variables and sales performance or effectiveness. Examination of the potential moderating influence of customer type, product type and type of criterion measure suggests evidence for validity generalization of aptitude predictors, although these validities are in general quite low. Among other predictor categories, however, findings are less conclusive and suggest that moderator variables, in particular product type, do influence the predictive validity of motivational, personal history, and skill variables. On the other hand, these predictor categories, on average, do better than the aptitude category in predicting sales performance. In this sense, they show more promise than aptitude in predicting performance.

A central issue in meta-analysis that affects such conclusions about relationships concerns the assumption that predictor variables grouped into factors or categories share variance because of their similar relationships to a common latent construct. The conceptual basis for grouping predictor variables is therefore extremely important, since the grouping has strong influence on the findings obtained using meta-analytic procedures. For example, predictor variables subsumed under the motivation factor refer variously to forcefulness, achievement motivation, self-esteem and empathy. One could argue that these variables do not belong together conceptually. Meta-analytic procedures correct for errors associated with sampling and unreliability of the measures themselves, but do not address such potential problems of different predictor measures within a category. These measures may reflect very different latent constructs. As a result, measures grouped within a category may subcluster and differ substantially in terms of their validity for predicting sales performance.

Viewed in this manner, it is evident that interpretation of the meta-analytic findings depends crucially on the assumptions made by the researchers about the underlying constructs measured by each predictor variable. For example, as noted previously, there is a relative dearth of research investigating the construct validity of biographical and personal history variables. Accordingly, less confidence may be placed in interpretation of validity results related to these predictor categories. Further, variables subsumed under the motivation category include diverse measures of dispositional tendencies and may also represent several subclusters of predictors. For example, we noted consistent and reasonably substantial correlations between measures of dominance/forcefulness and performance. In short, clarification of the construct space underlying diverse predictor categories is essential for effective use of meta-analytic methods.

The findings reviewed indicate that sales effectiveness involves multiple determinants. Previous attempts to predict objective global sales effectiveness indices with individual determinants, such as aptitude, motivation, personal history, vocational interests, and skill-related variables have been largely unsuccessful. Studies using composite predictor equations have also frequently failed to account for substantial amounts of variance in objective criterion measures. One major reason for these negative findings appears to be failure to conceptualize properly predictor-criterion relationships.

In most cases, objective criterion measures reflect the results of salesperson behavior and environmental factors. To successfully examine predictor-criterion relationships, investigators need to recognize the

complex relationships among predictors, behavior, performance, and effectiveness. Investigators may find that aptitude, skill-related, motivational, personal, and personality variables can be potent predictors of sales performance although generally ineffective in predicting sales effectiveness. The empirical findings may well have sold these variables short, due to failure to adequately conceptualize how predictor variables relate to sales criteria and due to inadequate research designs. Systematic research focused on predictor-performance, behavior-performance, and performance-effectiveness relations is necessary. The fruits of such future research should yield meaningful and useful information for enhancing prediction of sales performance and effectiveness.

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